Operations Manual
Special Low Flying Procedures For The NOAA Long-EZ N3R During The 1997 Southern Great Plains Experiment (SGP97)

Revision 0
12 June 1997

Ed Dumas
Research Pilot
Atmospheric Turbulence and Diffusion Division
National Oceanic and Atmospheric Administration
NOAA/ATDD

Oak Ridge, TN

ASW-FSDO-OKC
ACCEPTED James R. Keller
DATED JUN 17 1997

Operations Manual
Special Low Flying Procedures For The NOAA Long-EZ N3R
During The 1997 Southern Great Plains Experiment (SGP97)

Revision 0
12 June 1997

Ed Dumas
Research Pilot
Atmospheric Turbulence and Diffusion Division
National Oceanic and Atmospheric Administration
NOAA/ATDD

Oak Ridge, TN

1.0 NOAA/ATDD Organization:

1.01 Organization Chart:

Rayford P. Hosker
Director
NOAA/ATDD
(423) 576-1248

Timothy L. Crawford
Branch Chief
Air-Surface Exchange Branch
(423) 576-0452

Carmen J. Nappo
Branch Chief
Modelling Branch
(423) 576-1252

Edward J. Dumas, Jr
Computer Progammer
Research Pilot
(423) 576-3500

1.0 Address:

Edward J. Dumas, Jr
Atmospheric Turbulence and Diffusion Division
National Oceanic and Atmospheric Administration
456 S. Illinois Ave
Oak Ridge, TN 37831-2456

(423) 576-3500 Voice
(423) 576-1327 Fax
dumas@atdd.noaa.gov e-mail

2.0 Pilots Authorized to Fly Under this Operations Manual:

1. Edward J. Dumas, Jr
   - FAA Commercial Pilot Certificate #308682925 for airplanes single engine land.
   - FAA Instrument Rating for airplanes.
   - Medical Certificate Class 2 valid to 04/01/1999.

3.0 Aircraft to be Used for SGP97:

The aircraft to be used under this Operations Manual is an experimental Long-EZ, US registration number: N3R. It is registered in the United States as an experimental aircraft owned by Timothy L. Crawford, 155 Whipporwill, Oak Ridge, TN 37831.
Provision to operate the Long-EZ for government research is provided by letter in Attachment 2.

4.0 Operations Manual Distribution and Revision:

This operations manual is provided as part of the required low flying waiver application (waiver to FAR 91.119(c)) to cover NOAA Long-EZ participation in the Southern Great Plains Experiment during the period 16 June to 22 July 1997. Two copies are provided for Oklahoma City Flight Standards District Office (FSDO) approval. Due to the short validity period for this operations manual/waiver request, revisions are not planned. However, if unforeseen circumstances necessitate revisions, they will first be brought to the attention of the Oklahoma City FSDO for approval.

5.0 SGP97 Background:

The primary objective of the 1997 Southern Great Plains Experiment (the general operating area is shown in Attachment 1) is to study the effects of soil moisture on the characteristics of the atmospheric boundary layer, and to develop techniques to measure soil moisture distribution by remote sensing satellites. During the experiment moisture will be measured directly at a number of surface stations (ground sites) in the operations area, from aircraft at low altitudes using direct measurement techniques, from aircraft at higher altitudes using remote sensing equipment, and from satellites. The role of the NOAA Long-EZ will be to make low altitude measurements of the exchange of energy and trace gases (CO_2 and water vapor) between the vegetated surface and the atmospheric boundary layer above it.

5.01 Long-EZ Flight Plan Types:

Daily, the NOAA Long-EZ will fly tracks picked from the list given in section 6.0, below. Specific track selection will be based on ground site, aircraft, and satellite data. In general, there will be three types of flight plans (all day VFR) for the NOAA Long-EZ during the period of this experiment. The three flight plan types are as follows:

1. Short tracks 15 to 20 nm long, flown at various altitudes from as low as 100 feet above the surfaced up to the top of the boundary layer (could be as high as 5000' above ground level). These tracks will be used to examine specific vegetation and soil moisture types.

2. Regional tracks approximately 60 nm long. These tracks will be flown at altitudes as in 1 above. Note that due to the longer line lengths, minimum altitudes for certain portions of these tracks may have to be raised to 500' AGL, or short deviation from the straight line track may be required, in order to maintain at least 500' clearance from obstructions.

3. Intercomparisons with ground based observation sites. In the operations area there are a number of ground observation sites which will make point measurements at ground level of moisture and, occasionally, gaseous and heat fluxes. Intercomparisons of data from the NOAA Long-EZ sensors and ground sites (flight plans 1 and 2 above). These intercomparisons will require that the NOAA Long-EZ fly short tracks close to the ground sites, approximately 1.5 km long, at 50 to 100 feet AGL, centered on these ground sites.

6.0 Area of Operations:

For the period of the SGP97 experiment the NOAA Long-EZ will operate out of the Oklahoma Executive Jet Charter at the Will Rogers World Airport in Oklahoma City. The area of operations for the experiment is shown in Attachment 1. In general, data collection flights will take place in a north-south corridor passing to the west side of Oklahoma City. The flight tracks described below were overflown in May, 1997 at ~1000 ft AGL to make sure that conflicts with sensitive areas, buildings, and as much as possible main road crossings, were eliminated.

6.01 Data Collection Tracks:

Waypoint/Position			General Area	Track Length	Comments
AS 35 42.5N 97 53.0W	to	AN 36 39.5N 97 36.7W	(Enid area)	58.5 nm	- 4 powerline crossings on this track - divert to the east around Fairmont which lies ~19nm south of AN - Call Vance Approach prior to entering their area on 121.3 - 3 or 4 200 to 300 foot towers within 2 to 5 nm of track, closest about 2 nm east along the divided highway running EW into Enid
BS 35 42.5N 97 46.0W	to	BN 36 39.5N 97 29.7W	(Enid area)	58.5 nm	- large tower (420 ft high) at 35 59.0N 97 41.0W - divert around gas processing plant 5.3 nm north of BS - 5 powerline crossings on this track - divert track to the west as you near a private airport located just west of the town of Covington - Call Vance Approach prior to entering their area
CS 36 25.0N 97 29.0W	to	CN 36 40.3N 97 29.0W	(NE of Enid)	15.3 nm	- this track comes close to the ARM ground site, it should be flown displaced ~1/2 nm east or west the site in order to stay downwind - 2 powerline crossings along southern half of track - Call Vance App. Before entering area

Waypoint/Position			General Area	Track Length	Comments
DW 36 12.6N 97 47.0W	to	DE 36 12.6N 97 26.5W	(SE of Enid)	16.5 nm	- track is a bit hilly at the east end - almost all inside Vance Control area - call Vance prior to entering - crosses a powerline near west end
EW 35 46.0N 97 52.3W	to	EE 35 46.0N 97 33.0W	(SE of Kingfisher)	15.7 nm	- a number of horse farms along this line, stay clear of horses, may have to abandon this line because of the livestock – consider a sensitive area
ES 35 45.0N 97 52.3W	to	EN 36 02.0N 97 51.7W	(Kingfisher area)	17.0 nm	- line runs north-south between two roads - a few homes near the north end - 220 foot tower about 2 nm north of EN - north end is in Vance control area, so call prior to entering
FS 35 07.8N 98 05.0W	to	FN 35 24.0N 98 05.0W	(NW of Chickasha)	16.2 nm	- terrain rises in the north half of the track – holly with some forest - track runs parallel to a powerline (powerline is about a mile to the west of this track).
FW 35 09.0N 98 17.0W	to	FE 35 16.0N 98 00.0W	(NW of Chickasha)	15.6 nm	- 200 to 300 foot high towers in the turning areas at each end of this track
GW 34 50.0N 98 15.7W	to	GE 34 57.2N 98 02.0W	(Washita area)	13.4 nm	- track over mostly winter wheat - powerline near the south west end of the line and also in the turning area just off the southwest end, another 2 powerlines about 1/3 the way along the line from the sw end - track about ½ inside Washita MOA - 420 foot tower near GE
GS 34 42.0N 98 02.0W	to	GN 34 58.6N 98 57.7W	(Washita area)	1741m	- 390 foot tower about one mile west of the south end (GS) - 290 foot tower to east side of track at about the mid point - powerline crossing near the mid point of the line

Waypoint/Position			General Area	Track Length	Comments
RW 35 32.8N 98 13.0W	to	RE 35 32.8N 98 03.3W	(El Reno area)	7.9 nm	- track is north of and parallels a divided highway - watch for cattle at the east end of the track and a couple of horses near the west end - powerline crossing about midway along the track

6.02 SGP97 Ground Sites:

Ground site location for the NOAA Long-EZ data intercomparisons (flight plan 3, para 5.01, above) are shown on the attached map. Tracks for intercomparisons will be short - approximately 5 km long, centered on the particular ground site. Altitudes along the tracks will be as low as 50 to 100 feet above the ground. Track orientation will vary such that the aircraft passes to the downwind side of the ground site to ensure that ground site data are not contaminated by exhaust from the NOAA Long-EZ. The aircraft will pass within 500 feet, but no closer than 200 feet, laterally from the site or from persons at the site. The ground sites will not be directly overflown at less than 500' AGL. For the remainder of the track (other than in the immediate vicinity of the ground site) the aircraft will maintain at least 500' separation from all observed people, occupied vehicles, houses, structures, and livestock. The people at the ground sites are considered 'participants' in the SGP97 experiment and will be aware of and in agreement with NOAA Long-EZ intercomparison runs prior to their commencement. Ground site locations are as follows:

Ground Site	Location
1.ARM CART	(About 35 nm NE of Enid) 36 36.1 N 97 28.9 W
2.El Reno Agricultural Station	(3 sites west of El Reno) 35 33.3 N 98 01.0 W 35 34.1 N 98 03.7 W 35 33.8 N 98 08.7 W
3.Little Washita (NOAA tower)	(SW of Chickasha) 34 57.6 N 97 58.4 W
4.Verma Tower	(NW of Ponca City) 36 46.0 N 97 07.0 W

7.0 Flight Operations:

7.01 Weather Conditions:

Flight operations while flying sampling tracks for the SGP97 experiment will be carried out under day VFR conditions only.

7.02 Operations in Airspace Requiring Two-Way Communications:

Authorization from the appropriate air traffic control facility (for example Vance Approach on 121.3). In addition, wherever tracks AS-AN, BS-BN, CS-CN, or DW-DE are to be flown, Vance AFB Operations will be advised by telephone (405) 213-7850 or FAX (405) 213-7705 at least one hour prior to entering the Vance 1A or 1B MOA.

7.03 Operations Within 500 Feet of Persons:

Operations within 500 feet but not less than 200 feet of persons is authorized only when collecting intercomparison data at the SGP97 ground site locations described in Section 6.0 above. The aircraft will not be flown at altitudes less than 500 feet over the top of persons at the site when the flight path of the aircraft is within 200 feet laterally of the ground site. If beyond 200 feet laterally from the site, minimum permissible altitude for the aircraft is 50 feet above ground level. Intercomparison passes within 500 feet, but in no case less than 200 feet, laterally will be carried out only on the downwind side of the ground site. In case of engine failure, the aircraft will be steered away from the ground site such that its trajectory does not pass within 200 feet of the ground site.

7.04 Entry/Departure Paths:

Since intercomparisons must be flown downwind of the ground site, and it is not possible to predict what the wind direction will be at the time the intercomparisons are to be made, entry and departure paths for the intercomparison runs cannot be specified. Orientation of these tracks will be made based on conditions at the time at the particular ground site. Guidelines to be used in choosing the entry and departure paths for intercomparison tracks are as follows:

1. In the immediate vicinity of the ground site the requirements of 7.03, above, apply;
2. Minimum altitude anywhere along the 5 km intercomparison track is 50 feet AGL;
3. For portions of the 5 km track other than in the immediate vicinity of the ground site, people, occupied vehicles, livestock, buildings, etc, will be avoided by at least 500 feet;
4. Intercomparison tracks will normally be straight lines. Turns, if required will be kept to a minimum. Maximum turn allowable in an intercomparison track is 15 degrees.

7.05 Sensitive Areas:

Pilots are alerted to the fact that operations will be carried out in a generally rural setting. In the operations area there are, among other types, horse, cattle, emu, and ostrich farms. These livestock types may be very sensitive to the close passage of aircraft such as the NOAA Long-EZ. Pilots must be aware of the effect the aircraft has on livestock and must adjust passing distances accordingly to ensure that the animals are not unduly alarmed.

7.06 Navigation:

The primary means of navigation along the flight tracks will be visual. However, track guidance will also be provided to the pilot via outputs from the IImorrow/Apollo 2001 GPS installed in the NOAA Long-EZ. The system will provide a display of cross track error and track angle error. The pilot's objective will be to keep displayed cross track errors to a minimum while visually steering the aircraft so as to maintain safe ground clearance and, for other than in the immediate vicinity of ground sites, at least 500 feet lateral or vertical separation from persons, buildings, etc. on the ground.

8.0 Certification/Airworthiness:

The aircraft to be used under this Operations Manual is a Rutan Long-EZ, certificated in the experimental category.

9.0 Pilot Personnel Requirements:

For a person to qualify as a pilot for operation under this Operations Manual he must:
1. Be in possession of a current US Commercial pilot certificate,
2. Have at least 500 hours pilot-in-command (PIC) logged,
3. Have at least 100 hours in the category and class of aircraft to be used,
4. Have logged at least 5 hours in the NOAA Long-EZ aircraft.

9.01 Pilot Checkout:

Prior to commencing operations below 500 feet AGL, the pilot will overfly each track and ground site at ~1000 feet in order to become familiar with the features along the tracks and to identify and record any significant obstructions which may have been missed. The pilot will have knowledge of:
1. Each track and general features in the vicinity of each ground site,
2. Aircraft performance limitations,
3. Emergency procedures,
4. Contents of this Operations Manual,
5. Terms and conditions of the waiver to FAR 91.119(c)

10.0 Accident Notification:

In case of an accident occurring as a result of operations under this Operations Manual the procedures outlined in the NTSB Part 830 will be followed. Initial action will be to notify the nearest FSS regarding the nature of the occurrence. Detailed procedures are provided as Attachment 3.

PART 2. 49 CFR 830, NOTIFICATION AND REPORTING OF AIRCRAFT ACCIDENTS OR INCIDENTS AND OVERDUE AIRCRAFT, AND PRESERVATION OF AIRCRAFT WRECKAGE, MAIL, CARGO, AND RECORDS (Amended June 21, 1989)

PART 830—NOTIFICATION AND REPORTING OF AIRCRAFT ACCIDENTS OR INCIDENTS AND OVERDUE AIRCRAFT, AND PRESERVATION OF AIRCRAFT WRECKAGE, MAIL, CARGO, AND RECORDS

Subpart A—General

Sec.

Subpart B—Initial Notification of Aircraft Accidents, Incidents, and Overdue Aircraft

Subpart C—Preservation of Aircraft Wreckage, Mail, Cargo, and Records

Subpart D—Reporting of Aircraft Accidents, Incidents and overdue Aircraft

Subpart E—Reporting of Public Aircraft Accidents and Incidents

Authority: 49 U.S.C. 1441 and 1901 et seq.

Subpart A—General

§ 830.1 Applicability.

This part contains rules pertaining to:

(a) Notification and reporting aircraft accidents and incidents and certain other occurrences in the operation of aircraft when they involve civil aircraft of the United States wherever they occur, or foreign civil aircraft when such events occur in the United States, its territories or possessions.

(b) Reporting aircraft accidents and listed incidents in the operation of aircraft when they involve certain public aircraft.

(c) Preservation of aircraft wreckage, mail, cargo, and records involving all civil aircraft in the United States, its territories or possessions.

§830.2 Definitions.

As used in this part the following words or phrases are defined as follows:

"Aircraft accident" means an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

"Civil aircraft" means any aircraft other than a public aircraft.

"Fatal injury" means any injury which results in death within 30 days of the accident.

"Incident" means an occurrence other than an accident associated with the operation of an aircraft, which affects or could affect the safety of operations.

"Operator" means any person who causes or authorizes the operation of an aircraft, such as the owner, lessee, or bailee of an aircraft.

"Public aircraft" means an aircraft used exclusively in the service of any government or of any political subdivision thereof, including the government of any State, Territory, or possession of the United States, or the District of Columbia, but not including any government-owned aircraft engaged in carrying persons or property for commercial purposes. For purposes of this section "used exclusively in the service of" means, for other than the Federal Government, an aircraft which is owned and operated by a governmental entity for other than commercial purposes or which is exclusively leased by such governmental entity for not less than 90 continuous days.

"Serious injury" means any injury which: (1) Requires hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

"Substantial damage" means damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part.

Subpart B—Initial Notification of Aircraft Accidents, Incidents and Overdue Aircraft

§ 830.5 Immediate notification.

The operator of an aircraft shall immediately, and by the most expeditious means available, notify the nearest National Transportation Safety Board (Board), field office[1] when:

(a) An aircraft accident or any of the following listed incidents occur:

(1) Flight control system malfunction or failure;

(2) Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness;

(3) Failure of structural components of a turbine engine excluding compressor and turbine blades and vanes;

(4) In-flight fire; or

(5) Aircraft collide in flight.

(6) Damage to property, other than the aircraft, estimated to exceed $25,000 for repair (including materials and labor) or fair market value in the event of total loss, whichever is less.

(7) For large multiengine aircraft (more than 12,500 pounds maximum certificated takeoff weight):

(i) In-flight failure of electrical systems which requires the sustained use of an emergency bus powered by a back-up source such as a battery, auxiliary power unit, or air-driven generator to retain flight control or essential instruments;

(ii) In-flight failure of hyraulic systems that results in sustained reliance on the sole remaining hyraulic or mechanical system for movement of flight control surfaces;

(iii) Sustained loss of the power or thrust produced by two or more engines; and

(iv) An evacuation of aircraft in which an emergency egress system is utilized.

(b) An aircraft is overdue and is believed to have been involved in an accident.

§830.6 Information to be given in notification.

The notification required in § 830.5 shall contain the following information, if available:

(a) Type, nationality, and registration marks of the aircraft;

(b) Name of owner, and operator of the aircraft;

(c) Name of the pilot-in-command;

(d) Date and time of the accident;

PART 2. 49 CFR 830, NOTIFICATION AND REPORTING OF AIRCRAFT ACCIDENTS OR INCIDENTS AND OVERDUE AIRCRAFT, AND PRESERVATION OF AIRCRAFT WRECKAGE, MAIL, CARGO, AND RECORDS (Amended June 21, 1989, continued)

(e) Last point of departure and point of intended landing of the aircraft;

(f) Position of the aircraft with reference to some easily defined geographical point;

(g) Number of persons aboard, number killed, and number seriously injured;

(h) Nature of the accident, the weather and the extent of damage to the aircraft, so far as is known; and

(i) A description of any explosives, radioactive materials, or other dangerous articles carried.

Subpart C—Preservation of Aircraft Wreckage, Mail, Cargo, and Records

§830.10 Preservation of aircraft wreckage, mail, cargo, and records.

(a) The operator of an aircraft involved in an accident or incident for which notification must be given is responsible for preserving to the extent possible any aircraft wreckage, cargo, and mail aboard the aircraft, and all records, including all recording mediums of flight, maintenance, and voice recorders, pertaining to the operation and maintenance of the aircraft and to the airmen until the Board takes custody thereof or a release is granted pursuant to §831.12(b) of this chapter.

(b) Prior to the time the Board or its authorized representative takes custody of aircraft wreckage, mail, or cargo, such wreckage, mail, or cargo may not be disturbed or moved except to the extent necessary:

(1) To remove persons injured or trapped;

(2) To protect the wreckage from further damage; or

(3) To protect the public from injury.

(c) Where it is necessary to move aircraft wreckage, mail or cargo, sketches, descriptive notes, and photographs shall be made, if possible, of the original positions and condition of the wreckage and any significant impact marks.

(d) The operator of an aircraft involved in an accident or incident shall retain all records, reports, internal documents, and memoranda dealing with the accident or incident, until authorized by the Board to the contrary.

Subpart D—Reporting of Aircraft Accidents, Incidents, and Overdue Aircraft

§830.15 Reports and statements to be filed.

(a) *Reports.* The operator of an aircraft shall file a report on Board Form 6120.1 (OMB No. 3147-005) or Board Form 7120.2 (OMB No. 3147-0001)[3] within 10 days after an accident, or after 7 days if an overdue aircraft is still missing. A report on an incident for which notification is required by § 830.5(a) shall be filed only as requested by an authorized representative of the Board.

(b) *Crewmember statement.* Each crewmember, if physically able at the time the report is submitted, shall attach a statement setting forth the facts, conditions, and circumstances relating to the accident or incident as they appear to him. If the crewmember is incapacitated, he shall submit the statement as soon as he is physically able.

(c) *Where to file the reports.* The operator of an aircraft shall file any report with the field office of the Board nearest the accident or incident.

Subpart E—Reporting of Public Aircraft Accidents and Incidents

§ 830.20 Reports to be filed.

The operator of a public aircraft other than an aircraft of the Armed Forces or Intelligence Agencies shall file a report on NTSB Form 6120.1 (OMB No. 3147-001)[3] within 10 days after an accident or incident listed in § 830.5(a). The operator shall file the report with the filed office of the Board nearest the accident or incident.[4]

Signed at Washington, DC, on this 16th day of September 1988.

James L. Kolstad,

Acting Chairman.

[FR Doc. 88-21705 Filed 9-22-88; 8:45 am]

BILLING CODE 7533-01-M

[1] The National Transportation Safety Board field offices are listed under U.S. Government in the telephone directories in the following cities:

Anchorage, Alaska; Atlanta Ga.; Chicago, Ill.; Denver, Colo.; Fort Worth, Tex.; Kansas City, Mo.; Los Angeles, Calif.; Miami, Fla.; New York, N.Y.; Seattle, Wash.

[2] Forms are available from the Board field offices (see footnote 1), the National Transportation Safety Board, Washington, DC 20594, and the Federal Aviation Administration, Flight Standards District Office

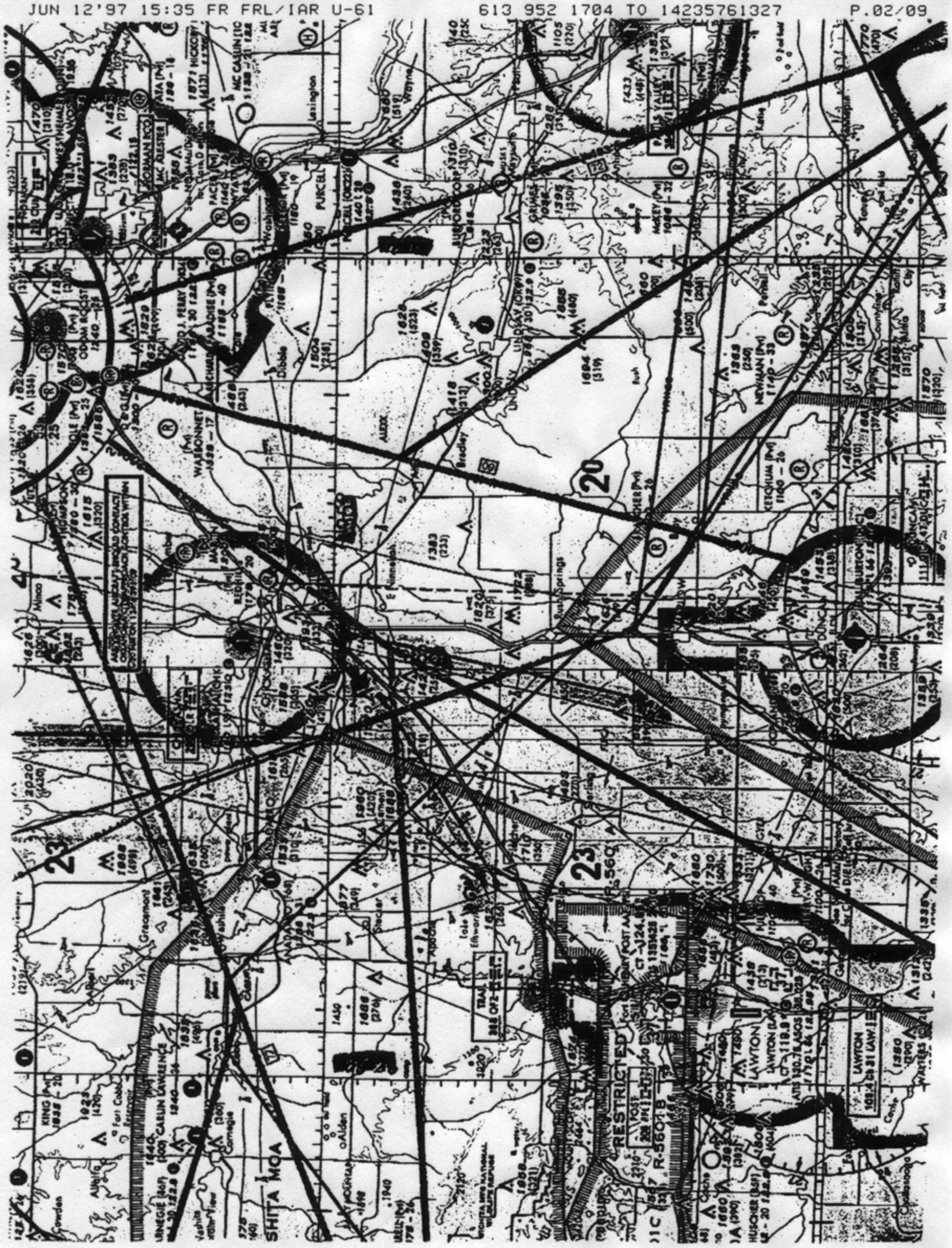
[3] To obtain this form, see footnote 2.

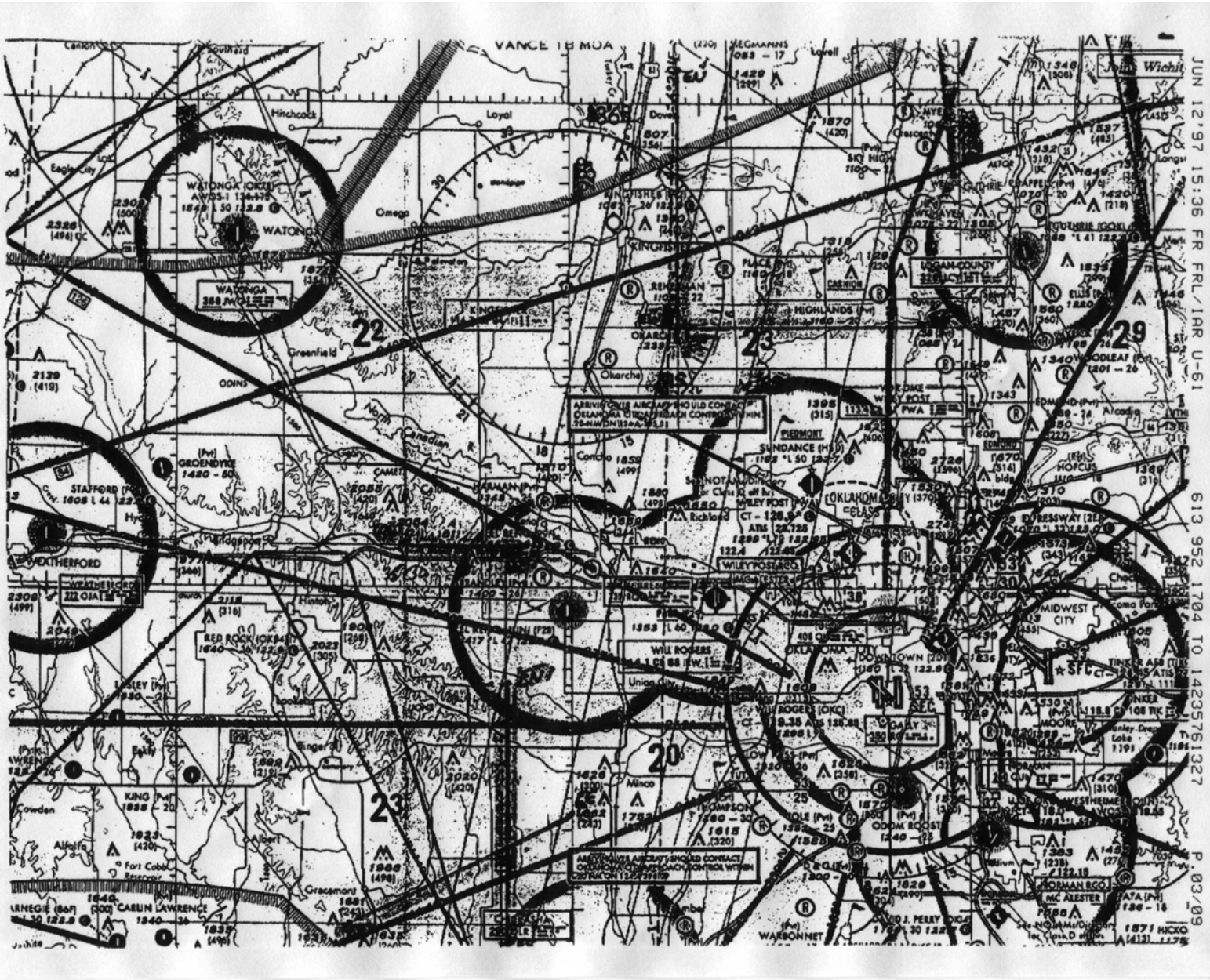
[4] The locations of the Board's field offices are set forth in footnote 1.

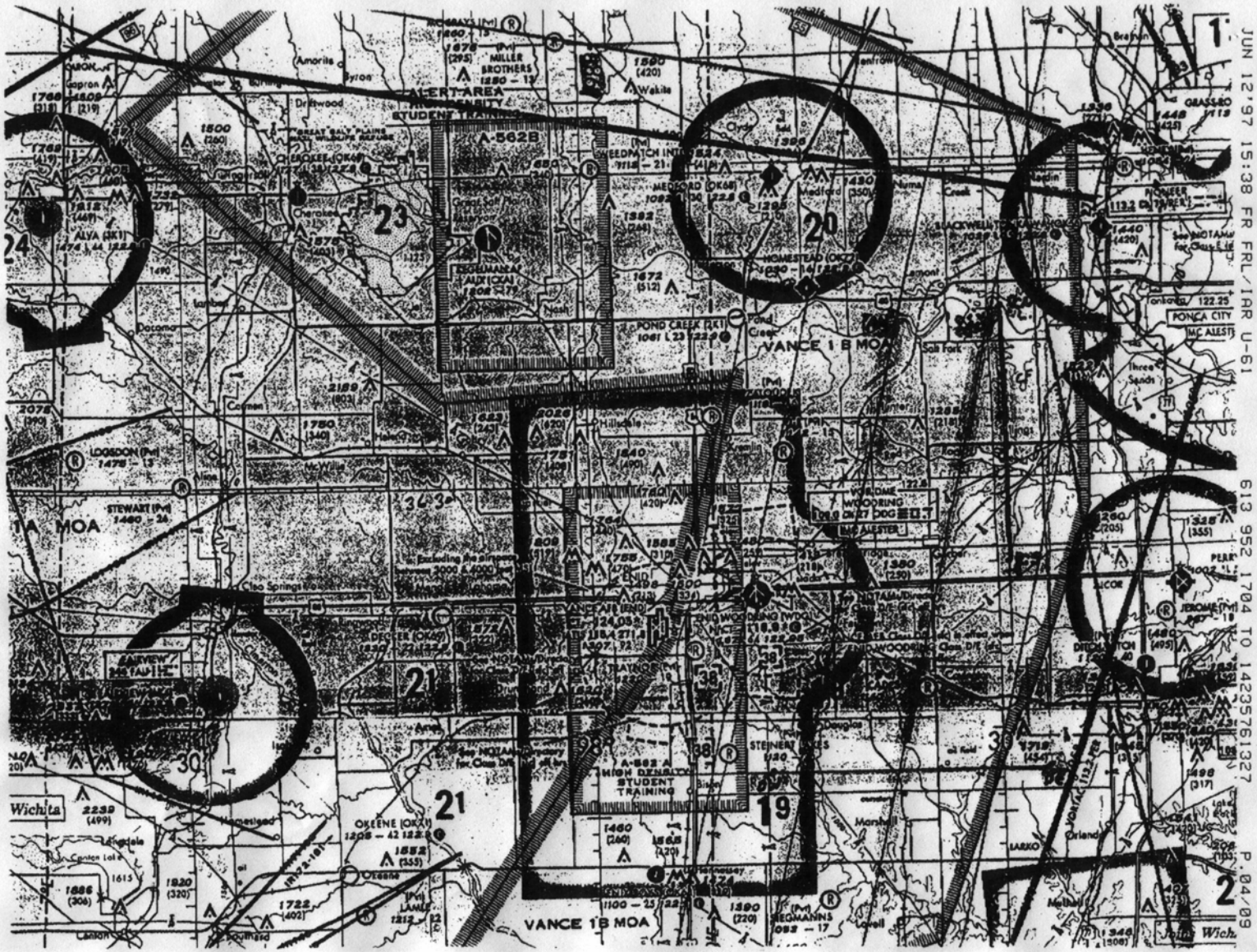
Attachment 1

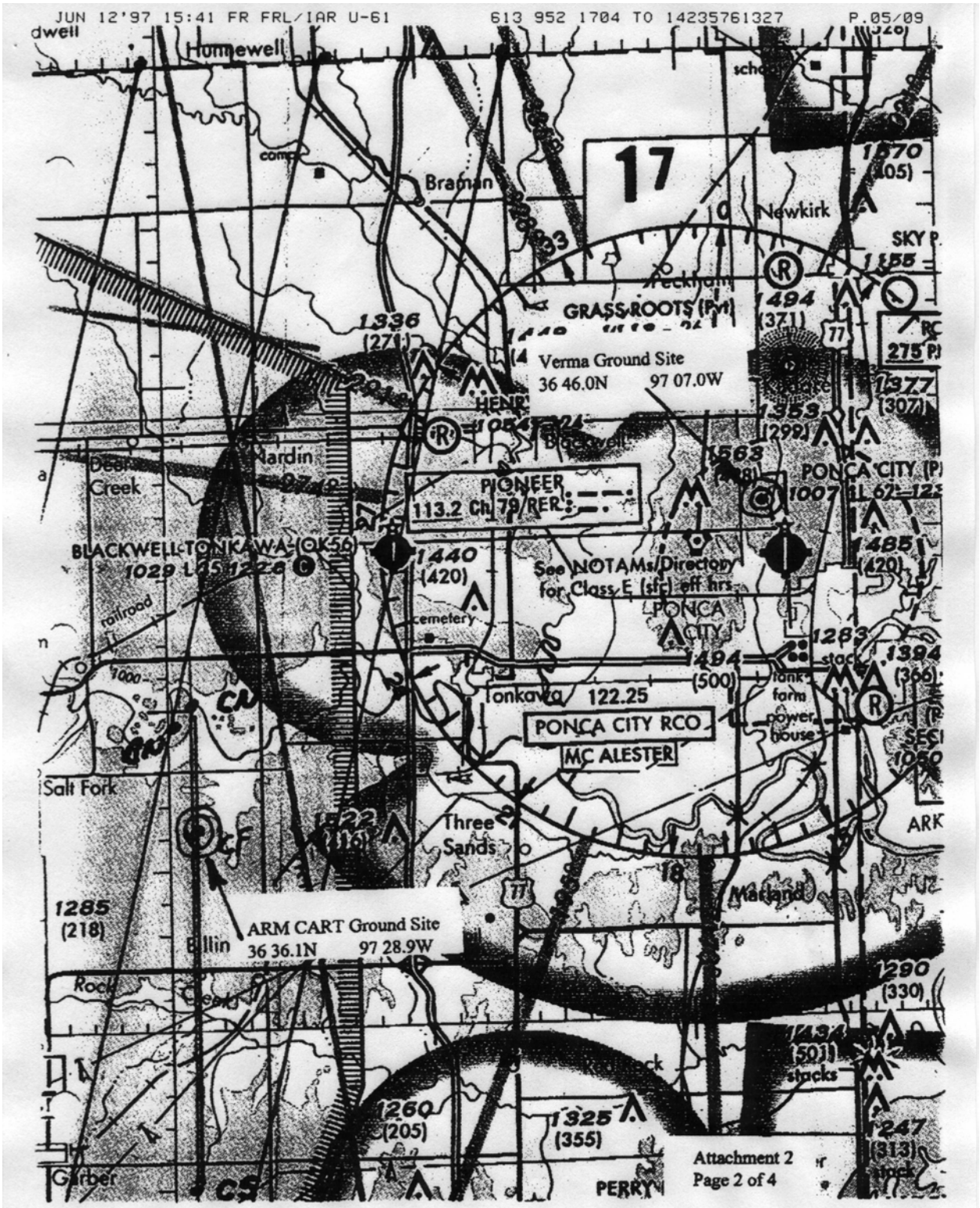
Ed Dumas
Research Pilot
Atmospheric Turbulence and Diffusion Division
National Oceanic and Atmospheric Administration
NOAA/ATDD

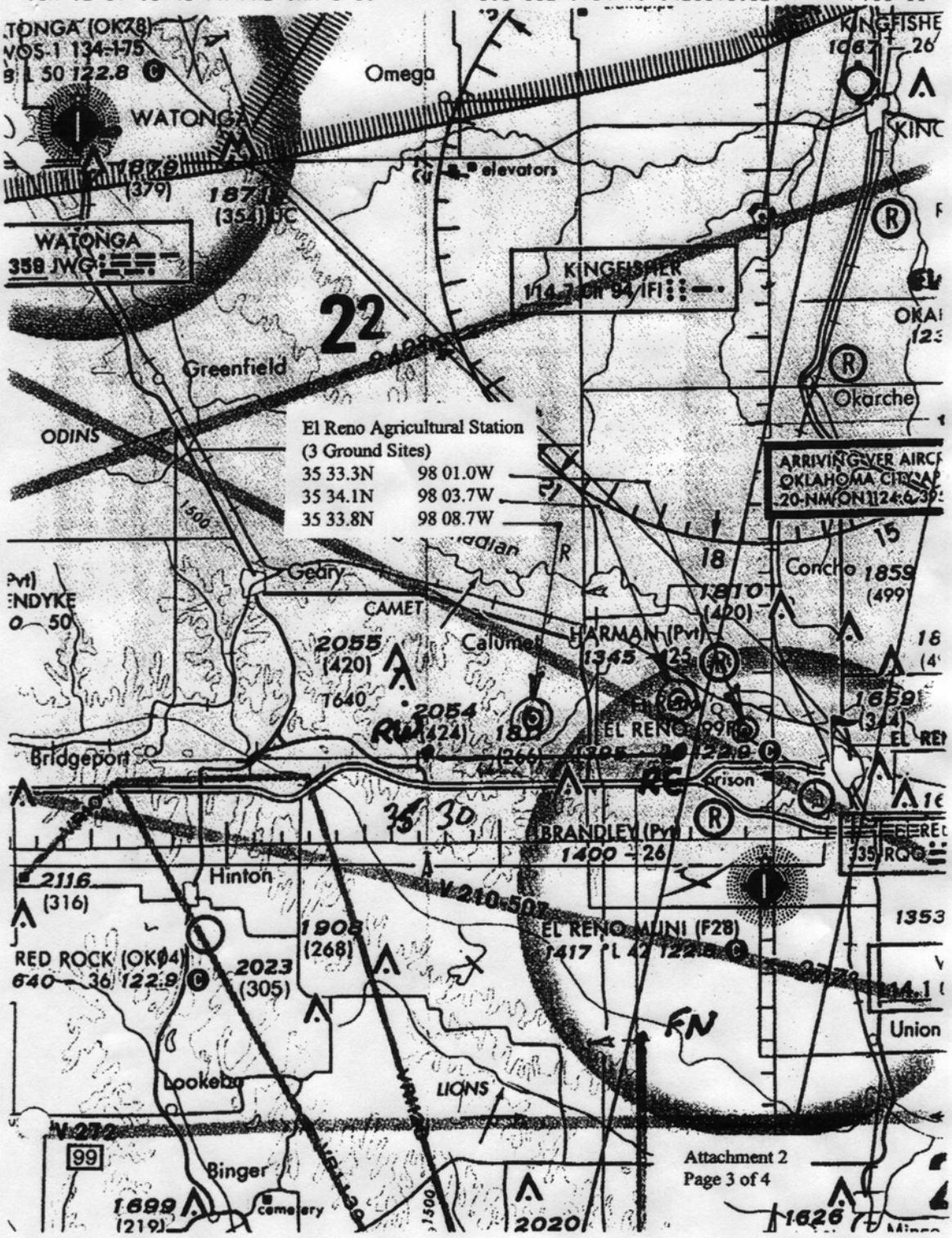
Oak Ridge, TN

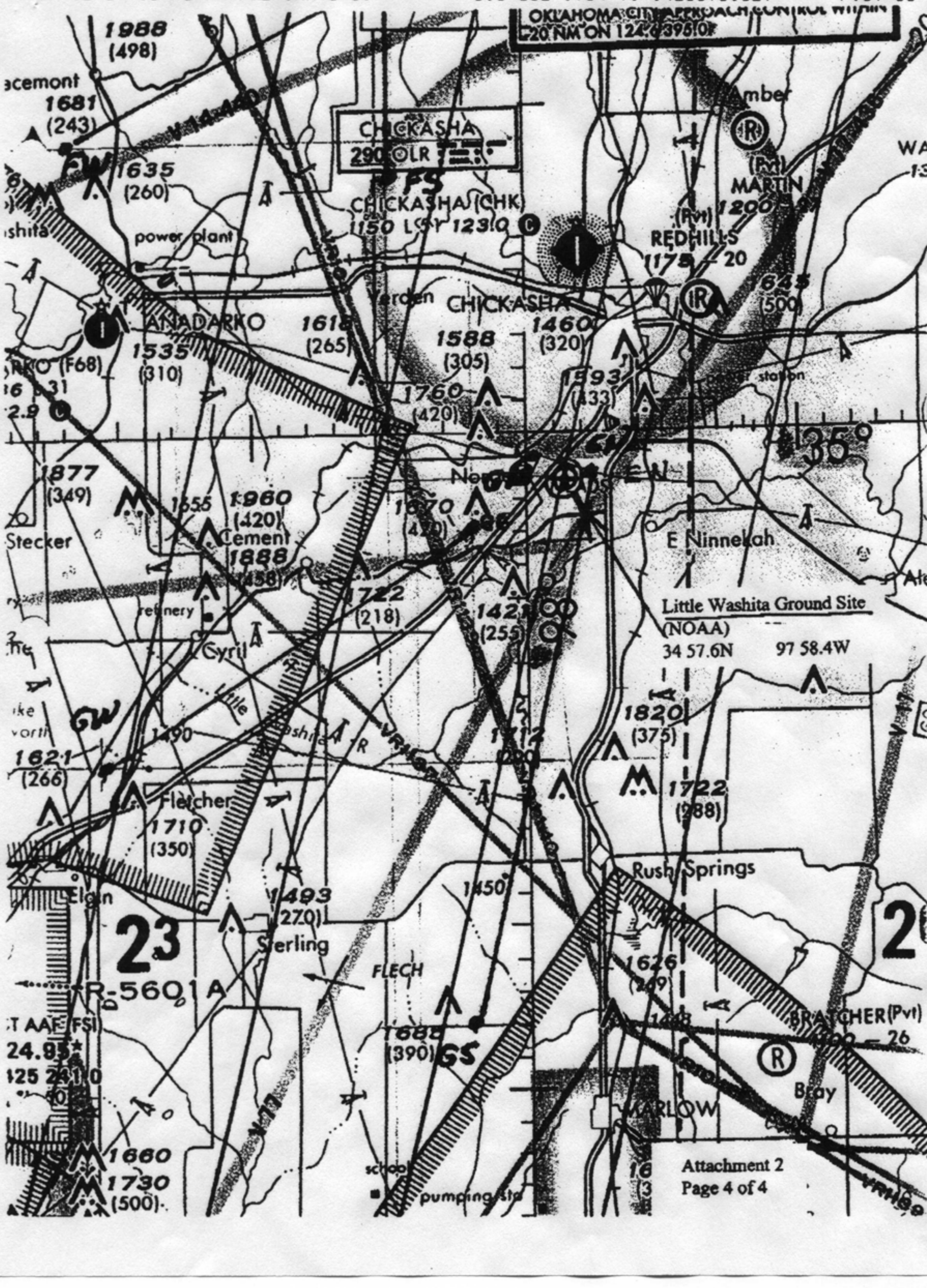

PURCELL
20
23
RESTRICTED
LAWTON


VANCE TR MOA
WATONGA
Greenfield
Okarche
Hinchcock
Loyal
Omega
Eagle City
Kingfisher
Crescent
Guthrie
Langston
Meeker
Stafford
Bridgeport
Hydro
Weatherford
Clinton
Arapaho
Hopeton
Hopkins
Cement
Richland
Concho
Piedmont
Sundance
Wiley Post
Will Rogers
Oklahoma City
Midwest City
Tinker AFB
Moore
Norman
Lexington
Purcell
Blanchard
Newcastle
Tuttle
Minco
Chickasha
Binger
Anadarko
Alfalfa
Albert
Gracemont
Carnegie
Carlin Lawrence
Fort Cobb Reservoir
Lookeba
Eakly
Lawrence
Crowder
Union City
Harrah
Jones
Choctaw
Spencer
Nicoma Park
Del City
Valley Brook
Lake Stanley Draper
Westheimer
Norman Rgnl
Mc Alester
Pgmm
Wakonnet
Hicko
Thompson
Odom Roost
Sky High
Highlands
Place
Fashion
Edmond
Hofcus
Expressway
Pwa
Ellis
Woodleaf
Logan County
Kingfisher
Omega
Loyal
Hinchcock
Greenfield
Okarche


A-562B
A-562A
HIGH DENSITY STUDENT TRAINING
VANCE 1 B MOA
VANCE 1B MOA
ALERT AREA
MILLER BROTHERS
1250 – 13
MEDFORD (OKM)
HOMESTEAD (OKT)
POND CREEK (PK)
PONCA CITY
MC ALESTER
LOGSDON (PH)
STEWART (PH)
OKEENE (OKX)
Wichita
Enid
Medford
Pond Creek
Ponca City
Orlando
Marshall
Douglas
Clyde
Amorita
Byron
Wakita
Driftwood
Cherokee
Alva
Carmen
Hillsdale
Deer Creek
Three Sands
Jerome
Peak
Grassco
Pioneer
Blackwell
Lamont
Salt Fork
Arkansas
Canton Lake
Kingfisher
Okeene
Lamle
Larxo
Lovell
Meguinns
Steinert
Waukomis
Wichita Falls
1
2
19
20
21
23
30
38
122.25
613 952 1704 TO 14235761327
JUN 12'97 15:38 FR FRL/IAR U-61
P.04/09


Verma Ground Site
36 46.0N 97 07.0W
ARM CART Ground Site
36 36.1N 97 28.9W
PIONEER
113.2 Ch 79/RER
PONCA CITY RCO
MC ALESTER
Tonkawa 122.25
See NOTAMs/Directory for Class E (sfc) off hrs
BLACKWELL-TONKAWA (OK56)
PONCA CITY
GRASS ROOTS (PVT)
Hunnewell
Braman
Newkirk
Marland
Three Sands
Salt Fork
Dear Creek
Rock Creek
Billin
Garber
PERRY
railroad
cemetery
tank farm
power house
stacks
17
18


Omega
WATONGA
elevators
KINGFISHER
Greenfield
ODINS
Okarche
El Reno Agricultural Station
(3 Ground Sites)
35 33.3N 98 01.0W
35 34.1N 98 03.7W
35 33.8N 98 08.7W
Geary
CAMET
Calumet
HARMAN (Pvt)
Concho
Bridgeport
Hinton
BRANDLEY (Pvt)
EL RENO MUNI (F28)
RED ROCK (OK04)
Lookeba
LIONS
Binger
cemetery
Union
Attachment 2
Page 3 of 4


OKLAHOMA CITY APPROACH CONTROL WITHIN
20 NM ON 124.6 395.0
CHICKASHA
CHICKASHA (CHK)
Amber
MARTIN
REDHILLS
ANADARKO
Verden
CHICKASHA
power plant
Stecker
Cement
refinery
Cyril
E Ninnekah
Little Washita Ground Site
(NOAA)
34 57.6N 97 58.4W
Fletcher
Elgin
23
Sterling
R-5601A
FLECH
Rush Springs
BRATCHER (Pvt)
Bray
MARLOW
school
pumping sta
35°

Attachment 2

Ed Dumas
Research Pilot
Atmospheric Turbulence and Diffusion Division
National Oceanic and Atmospheric Administration
NOAA/ATDD

Oak Ridge, TN

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OFFICE OF ADMINISTRATION

RJ

JUL -7 1994

RECEIVED
JUN 13 1997
ASW-FSDO-OKC

MEMORANDUM FOR: R. P. Hosker, Jr.
Director, Atmospheric Turbulence and
Diffusion Division
Environmental Research Laboratories

FROM: Donald E. Humphries
Deputy Director

SUBJECT: Long-EZ Airborne Instrument Platform

This memorandum responds to your concern that travel regulations might impact your research pertaining to the instrument development program.

You should be pleased to learn that approval by the Director, Office of Administration, is no longer required for privately owned aircraft and rental aircraft piloted by a Government employee. Approvals are now granted in accordance with the National Oceanic and Atmospheric Administration (NOAA) Travel Handbook, Chapter 301-1.4b and NOAA Administrative Order 216-103, entitled Aircraft Operations Center Aviation Policies. National Weather Service (NWS) employees must also adhere to the NWS Operations Manual, Chapter D-79, NWS Flight Operations. This reinstates the original approval levels.

Thank you for sending the material regarding the Long-EZ airplane. I found it to be very interesting and I certainly appreciate your efforts.

Specific questions about this regulation can be directed to Pat Oliver on 301-413-3060.

cc: OA1 - F. DiGialleonardo

No certificate may be issued unless a completed application form has been received (14 C.F.R. 91, 101, and 105).

U.S. Department of Transportation
Federal Aviation Administration

APPLICATION FOR CERTIFICATE OF WAIVER OR AUTHORIZATION

Form Approved: O.M.B. No. 2120-0027

APPLICANTS — DO NOT USE THESE SPACES

Region	Date
SOUTHWEST	6/16/97

Action: ☒ Approved ☐ Disapproved — *Explain under "Remarks"*

Signature of authorized FAA representative:
James R. Kelly
for FRANK L. ALLEN, SUPERVISOR, OPS. UNIT

INSTRUCTIONS

Submit this application in triplicate (3) to any FAA Flight Standards district office.

Applicants requesting a Certificate of Waiver or Authorization for an aviation event must complete all the applicable items on this form and attach a properly marked 7.5 series Topographic Quadrangle Map(s), published by the U.S. Geological Survey (scale 1:24,000), of the proposed operating area. The map(s) must include scale depictions of the flightlines, showlines, race courses, and the location of the air event control point, Police dispatch, ambulance, and fire fighting equipment. The applicant may also wish to submit photographs and scale diagrams as supplemental material to assist in the FAA's evaluation of a particular site. Application for a Certificate of Waiver or Authorization must be submitted 45 days prior to the requested date of the event.

Applicants requesting a Certificate of Waiver or Authorization for activities other than an aviation event will complete items 1 through 8 only and the certification, item 15, on the reverse.

1. Name of organization: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ATMOSPHERIC TURBULENCE AND DIFFUSION DIVISION (NOAA/ATDD)

2. Name of responsible person: EDWARD JAMES DUMAS, JR COMPUTER PROGRAMMER, RESEARCH PILOT

3. Permanent mailing address	House number and street or route number	City	State and ZIP code	Telephone No
	456 S. ILLINOIS AVE	OAK RIDGE	TN 37831	(423) 576-3500

4. FAR section and number to be waived:
91.119 (c)

5. Detailed description of proposed operation *(Attach supplement if needed.)*:
TO PERFORM AERIAL CALIBRATIONS OF ATMOSPHERIC SENSING INSTRUMENTS (AIRCRAFT VS GROUND SITE). REQUIRES FLYING WITHIN 500 feet BUT NO CLOSER THAN 200 feet FROM GROUND SITE PERSONNEL.

6. Area of operation *(Location, altitudes, etc.)*: OKLAHOMA, FLIGHT @ 50 TO 100' AGL AT THE FOLLOWING SIX (6) LOCATIONS
① 36 36.1 N 97 28.9 W ③ 35 34.1 N 98 03.7 W ⑤ 34 57.6 N 97 58.4 W
② 35 33.3 N 98 01.0 W ④ 35 33.8 N 98 08.7 W ⑥ 36 46.0 N 97 07.0 W

7a. Beginning *(Date and hour)*: 0800 JUNE 17, 1997

b. Ending *(Date and hour)*: 1700 JULY 17, 1997

8. Aircraft make and model (a)	Pilot's Name (b)	Certificate number and rating (c)	Home address (Street, City, State) (d)
RUTAN LONG-EZ	EDWARD J. DUMAS, JR	308682925 COM SEL INSTRUMENT CLASS I MEDICAL 8/1/97	3220 BOOMERANG LN KNOXVILLE, TN 37931

FAA Form 7711-2 (6-86) Supersedes Previous Edition

ITEMS 9 THROUGH 14 TO BE FILLED OUT FOR AIR SHOW/AIR RACE WAIVER REQUESTS ONLY.

9. The air event will be sponsored by.

10. Permanent mailing address	House number and street or route number	City	State and ZIP code	Telephone No.

11. Policing *(Describe provisions to be made for policing the event.)*

12. Emergency facilities *(Mark all that will be available at time and place of air event.)*

☐ Physician ☐ Fire truck ☐ Other — *Specify* _____

☐ Ambulance ☐ Crash wagon _____

13. Air Traffic control *(Describe method of controlling traffic, including provision for arrival and departure of scheduled aircraft.)*

14. Schedule of Events *(include arrival and departure of scheduled aircraft and other periods the airport may be open.)*

Hour (a)	Date (b)	Event (c)

If sufficient space is not available, the entire schedule of events may be submitted on separate sheets, in the order and manner indicated above.

Please Read The undersigned applicant accepts full responsibility for the strict observance of the terms of the Certificate of Waiver or Authorization, and understands that the authorization contained in such certificate will be strictly limited to the above described operation.

15. Certification — I CERTIFY that the foregoing statements are true.

Date	Signature of applicant
JUNE 16, 1997	Edward [illegible] JUNE 16, 1997

Remarks

FAA Form 7711-2 (6-86) Supersedes Previous Edition

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF WAIVER

ISSUED TO

ATMOSPHERIC TURBULENCE AND DIFFUSION DIVISION (EDWARD J. DUMAS, JR.)
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

ADDRESS

456 S. ILLINOIS AVENUE
OAK RIDGE, TN 37831-2456

This certificate is issued for the operations specifically described hereinafter. No person shall conduct any operation pursuant to the authority of this certificate except in accordance with the standard and special provisions contained in this certificate, and such other requirements of the Federal Aviation Regulations not specifically waived by this certificate.

OPERATIONS AUTHORIZED

TO PERFORM LOW-LEVEL AERIAL CALIBRATIONS OF ATMOSPHERIC SENSING INSTRUMENTS (AIRCRAFT VERSUS GROUND SITE). OVER OTHER THAN CONGESTED AREAS, AIRCRAFT MAY BE OPERATED CLOSER THAN 500 FEET, BUT NO CLOSER THAN 200 FEET TO PERSONS ON THE SURFACE.

AREAS OF OPERATION ARE DETAILED IN THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION OPERATIONS MANUAL.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

14 CFR SECTION 91.119(C)

STANDARD PROVISIONS

1. A copy of the application made for this certificate shall be attached to and become a part hereof.
2. This certificate shall be presented for inspection upon the request of any authorized representative of the Administrator of the Federal Aviation Administration, or of any State or municipal official charged with the duty of enforcing local laws or regulations.
3. The holder of this certificate shall be responsible for the strict observance of the terms and provisions contained herein.
4. This certificate is nontransferable.

NOTE— This certificate constitutes a waiver of those Federal rules or regulations specifically referred to above. It does not constitute a waiver of any State law or local ordinance.

SPECIAL PROVISIONS

SEE ATTACHED OPERATIONS MANUAL
Special Provisions Nos. 1 to 6, inclusive, are set forth on the attached pages.

This certificate is effective from 06/17/97 to 07/19/97, inclusive, and is subject to cancellation at any time upon notice by the Administrator or his authorized representative.

BY DIRECTION OF THE ADMINISTRATOR

SOUTHWEST REGION
June 16, 1997

for Thomas R. Keller
FRANK L. ALLEN
SUPERVISOR, OPERATIONS UNIT, OKC FSDO

FAA Form 7711-1 (7-74) **DISTRIBUTION:** Applicant, OKC FSDO,
COORDINATION:

SPECIAL PROVISIONS - 91.119(C)

1. OPERATIONS ARE LIMITED TO VFR DAY ONLY.

2. UNLESS AUTHORIZED BY AN ACCEPTED OPERATIONS MANUAL, INTENTIONAL FLIGHT AT LESS THAN 500 FEET DIRECTLY OVER PERSONS ON THE SURFACE IS PROHIBITED. IN ADDITION, THE AIRCRAFT MAY NOT BE FLOWN ALONG A PATH THAT WOULD REQUIRE EXCESSIVE MANEUVERING TO AVOID PERSONS ON THE SURFACE IN THE EVENT OF AN EMERGENCY.

3. UNLESS AUTHORIZED BY AN ACCEPTED OPERATIONS MANUAL, THE TERMS OF THE WAIVER ARE LIMITED TO WITHIN ONE-QUARTER MILE OF THE AUTHORIZED ROUTE OR OPERATING AREA, EXCEPT THAT NO COMMUNITY WILL BE OVERFLOWN BELOW 500 FEET OR AT LESS THAN 1,000 FEET OVER THE CONGESTED AREAS OF A CITY.

4. OPERATIONS UNDER THIS WAIVER ARE LIMITED TO THE PILOTS LISTED ON FAA FORM 7711-2 OR THE ACCEPTED OPERATIONS MANUAL.

5. IN THE EVENT OF AN EMERGENCY (E.G., THE KNOWN OR SUSPECTED RUPTURE OF A GAS PIPELINE, FLOOD STORM, ETC.) REQUIRING IMMEDIATE ACTION, THE WAIVER HOLDER MAY USE PILOT PERSONNEL WITHOUT COMPLIANCE WITH EITHER THE INITIAL OR ANNUAL CHECK REQUIREMENTS. HOWEVER, WITHIN 7 DAYS OF THE TIME THIS EMERGENCY AUTHORIZATION IS EXERCISED, THE WAIVER HOLDER WILL NOTIFY THE FSDO RESPONSIBLE FOR ISSUING THE WAIVER OF SUCH ACTION.

6. EXCEPT WHEN NECESSARY TO SAFEGUARD HUMAN LIFE, NO OPERATIONS WILL BE CONDUCTED IN CLOSER PROXIMITY TO PERSONS ON THE SURFACE THAN AUTHORIZED BY THIS WAIVER.

ATMOSPHERIC TURBULENCE AND DIFFUSION DIVISION (EDWARD J. DUMAS, JR.)
EFFECTIVE: 06/17/97 TO 07/19/97
OKLAHOMA CITY FLIGHT STANDARDS DISTRICT OFFICE